

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/508,252

REMARKS

Preliminarily, Applicants respectfully request the Examiner to acknowledge Applicants' claim for foreign priority under 35 U.S.C. § 119 and receipt of the certified copy of the priority document from the International Bureau.

The amendments to claims 1 and 8 find support in the specification as originally filed as follows.

In Claim 1:

(i) "nonionic surfactant" is supported by the description at page 6, lines 5-7 and

Examples 3-5.

(ii) "without washing" is supported by claim 2 originally filed.

(iii) "in the form of aqueous solution" is supported by claim 7 and also claim 2 as originally filed.

(iv) Concentration of the nonionic surfactant, i.e., "not more than 0.05 % by weight to the granular polytetrafluoroethylene powder" is supported by the "0.05 % by weight" of Example 4.

In Examples 3 and 5, the nonionic surfactant is used in a concentration of 0.025 % by weight.

In Claim 8:

(i) "nonionic surfactant" is supported by the description at page 6, lines 5-7 and

Examples 3-5.

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(ii) The upper limit of the nonionic surfactant content, i.e., “70 ppm” is supported by the “70 ppm” of Example 4. In Examples 3 and 5, the nonionic surfactant is contained in an amount of 62 ppm and 60 ppm respectively.

(iii) The upper limit of the electrostatic charge, i.e., “10V” is supported by claim 9 as originally filed.

New claims 11 and 12 correspond to claims 3 and 4.

Claims 2, 5, 6, 7, 9 and 10 have been canceled.

Entry of the amendments is respectfully requested.

Review and reconsideration on the merits are requested.

Claims 1-10 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over any one of U.S. Patent 5,216,068 to Zippies, U.S. Patent 4,370,436 to Nakamura et al, U.S. Patent 4,665,113 to Eberl or U.S. Patent 3,882,217 to Banham et al. The Examiner considered each of the cited references as teaching a process of preparing granular PTFE polymers containing polar group-containing compounds. Alternatively, the Examiner considered that the claimed process would have been obvious because the prior art is said to disclose the same ingredients and therefore suggests to one of ordinary skill that they be combined as claimed.

Applicants traverse, and respectfully request the Examiner to reconsider in view of the amendments of the claims and the following remarks.

The invention is directed to a process for preparing a low-electrostatically-charging granular PTFE powder by contacting with an nonionic surfactant having an electrostatic

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charging-preventing ability when substantially dry, and then drying the granular powder without washing while retaining the nonionic surfactant. Furthermore, the nonionic surfactant is contacted in the form of an aqueous solution with a concentration of not more than 0.05% by weight to the granular PTFE powder.

In a further preferred embodiment as recited in claim 3, the granular PTFE powder does not contain a filler.

In accordance with the invention, electrostatic charging of the granular powder is inhibited even after drying, and good powder flowability is maintained at the time of transportation and molding.

Turning to the cited prior art, Zippiies discloses a technique for producing an agglomerated molding powder, which includes (a) premixing finely divided granular PTFE powder and a filler comprising a hydrophobic material, (b) suspending the mixture in a liquid agglomeration medium (composed of water and an organic liquid), (c) agglomerating the mixture suspended in the liquid agglomeration medium while stirring, to thereby form agglomerates, and (d) treating the agglomerates by agitation with a surface-active agent in an amount sufficient to wet the hydrophobic material (claim 1, bridging columns 6-7). In the working examples of Zippiies, after treating with the surface-active agent, the agglomerates were washed with water and then dried (column 5, line 68-column 6, line 1).

The invention differs from Zippiies in that in Zippiies, the surface-active agent is removed by washing, whereas claim 1 requires retaining the nonionic surfactant. Consequently,

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the electrostatic charge of the PTFE powder of Zippiies is higher than that of Applicants' granular powder as claimed in claim 8.

Nakamura et al uses an anionic surfactant in an amount of 0.1 to 5 % by weight based on the weight of PTFE (column 4, lines 65-68) in the granulation step, and therefore differs from amended claim 1 which requires a nonionic surfactant.

As demonstrated in the working example of Applicants' specification, even when the same amount of surfactant is used, an anionic surfactant gives a relatively higher electrostatic charge of 20 V (Example 1; anionic surfactant DS-101 is used in an amount of 0.05 % by weight). On the other hand, a nonionic surfactant gives 0 V (Example 4; nonionic surfactant Puronon #208 is used in an amount of 0.05 % by weight). Though the electrostatic charge is 7 V when an anionic surfactant is used in an amount of 0.1% as in Nakamura et al's lower limit, when using a nonionic surfactant in one fourth the amount (0.025%), the electrostatic charge remarkable decreases to 3 V (Example 3) and 0 V (Example 5).

This difference in electrostatic charge could not be expected from the prior art relied upon by the Examiner.

Eberl also uses an anionic surfactant such as an alkane sulfonate or alkyl sulfate during granulation in a concentration of 0.002 to 1 %, and the agglomerated product is washed.

Thus, the amended claims are patentable over Eberl for the same reasons that the amended claims are patentable over Zippiies (with or without washing) and Nakamura et al (different kind of surfactant).

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Banham et al uses a surfactant in an amount of at least 40 times the critical micelle concentration of the surfactant (claim 1 of Banham et al). Particularly with respect to a nonionic surfactant polyoxyethylene nonyl phenol having a critical micelle concentration of 0.01 % by weight, the lower limit is 0.4 % by weight, and is preferably 0.5 to 1.2 % by weight (column 4, lines 29-34). In Example 1 of Banham, polyoxyethylene nonyl phenol is used in an amount of 10 times the critical micelle concentration, that is 0.1% by weight, and the resultant compacted flow rating is 1, which is an inferior result. Namely, Banham et al teaches away from a lower concentration of an nonionic surfactant. Of course, Banham does not disclose the use of a nonionic surfactant concentration of not more than 0.05 % by weight as required by amended claim 1, and a granular powder having a nonionic content of 10 to 70 ppm and an electrostatic charge of not more than 10 V as required by amended claim 8.

For the above reasons, it is respectfully submitted that the amended claims are patentable over the applied prior art, and withdrawal of the foregoing rejection is respectfully requested.

Withdrawal of all rejections and allowance of claims 1, 3, 4, 8, 11 and 12 is earnestly solicited.

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In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

Respectfully submitted,



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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 2, 5, 6, 7, 9 and 10 are canceled.

The claims are amended as follows:

1. (Amended) A process for preparing a low-electrostatically-charging granular polytetrafluoroethylene powder prepared by contacting a nonionic surfactant [polar group-containing organic compound] having an electrostatic charging-preventing ability when substantially dry to a granular polytetrafluoroethylene powder, and then drying the granular powder without washing while the nonionic surfactant [polar group-containing organic compound] is kept remaining in the powder, said nonionic surfactant is contacted in the form of an aqueous solution at a concentration of not more than 0.05% by weight to the granular polytetrafluoroethylene powder.

8. (Amended) A granular polytetrafluoroethylene powder which contains [containing] a nonionic surfactant [polar group-containing organic compound] in an amount of 10 to 70 [300] ppm and has [having] an electrostatic charge of not more than 10 [50] V.

Claims 11 and 12 are added as new claims.